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EFFECT OF ACTIVITY-BASED COSTING ON PROFITABILITY OF HEALTHCARE SERVICES IN LEBANESE PRIVATE HOSPITALS
APPLIED CASE STUDY: JABAL-AMEL HOSPITAL

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Nowadays, activity-based-costing (ABC) system is one of the most dilemmatic systems discussed as method to achieve such objectives for hospitals, where the implementation of ABC system in hospitals provided a more accurate cost allocation of costs to the provided services by these hospitals. Considering that the Lebanese government, which pay more than 80% of the bills of healthcare services, pre-state the tariffs of healthcare services based on the estimated cost of services that is computed by the traditional cost accounting systems. This study aims to explore the effect of ABC implementation on the profitability of each healthcare service in Lebanese private hospitals. The study includes a case study for Jabal-Amel hospital in Lebanon.

Keywords: *medical services, profitability, cost formation, cost and profitability.*

Background

Hospitals in the Lebanon, face intense pressure from customers, regulators, and resource providers to efficiently produce quality health care. New regulations of healthcare sector in Lebanon, aims enhance the safety level for patients complicated the procedures of providing healthcare services in private hospitals, moreover it caused a raising pressure on the costs of such services. Hospitals managers are more concerned about increasing the efficiency and effectiveness of health care management to reduce cost and improve health care quality.

The prices of healthcare services is stated by the Lebanese government based of the cost computed using traditional cost accounting applied be private hospitals in Lebanon. The implementation of ABC system, considering the changes in healthcare system, may result variances in healthcare services cost.

This study explains the effect of implementation of ABC at a private hospital in Lebanon on the profitability of such services, compared to the traditional costing method. This paper is organized in three parts. The first part is a literature review of ABC implementation approaches in healthcare sector. The second is the empirical part which includes a discussion of the research design, data collection and analysis. The final part includes the findings, conclusion, limitations and future research opportunities.

Literature review

Innovation in healthcare continues to be a driving force in the quest to balance cost containment and healthcare quality. Innovation is critical component of business productivity and competitive survival (Vincent, et al., 2010). The healthcare sector has been a subject to profound transformation in the recent decades, both in organizational and financial terms. The reduction of public funding and the emphasis on performance measurement in public services have influenced the management and accounting practices of healthcare systems, as a result healthcare; internationally; face pressures to deliver cost efficient care in the face of escalating demands. These pressures have led to many initiatives to improve the management and efficiency of healthcare delivery (Michela, et al., 2005).

From 1850s, medical tariff began in California by using coding method, in this method a three-number code with a special listing was used for the classification of medical services (King, 2007). Regarding weaknesses in tariff method in the late 1850s, most hospitals made their tariffs calculating method based on Diagnosis Related Groups (DRG). In this method, instead of fixed tariffs, cost price of hospital services was calculated based on opinion of experts (West, et al., 1998). In the recent decade, by increasing activities and the importance of cost price in hospitals for managers and governments, understanding these changes and evaluating their effects on cost price is very important, traditional costing methods cannot practically meet these expectations (Rajabi, 2005).

Lebanon is a middle-income country with rapidly increasing public debt, minimal growth since 1999, and increasing poverty. A comparison of income between 1997 and 2017 shows an increase in percentage of in the low-income categories. The households with monthly income less than $800 have increased from 60.9 to 65.5% while the households with monthly income more than $1500 LL have decreased from 25.7 to 21.1%.

By law, the Lebanese ministry of public health (MOPH) is the Planner, Supervisor, Regulator and Evaluator of health, healthcare (HC) and the health system. Yet, the scarcity of financial and human resources made it impossible for the MOPH to perform its role. More importantly, the proliferation of funds with different tutelage authorities has diversified their accountability with the MOPH has no legal authority on them. The private hospitals at the expense of the MOPH. As the government hospitals could not be properly funded or administered, the MOPH extended its coverage of all HC services to all citizens in private hospitals and became the primary financing agency of these hospitals. It soon spent more than 80% of its budget on HC services in private hospitals which flourished.

Research Method

This paper takes a more exploratory approach with the intention of establishing how management accounting information users in Lebanese private hospitals, view the relevancy of cost accounting systems with modern managerial accounting objectives. The following sub-sections describe the paper design and the methods for data collection and analysis.

The study was conducted in Jabal-Amel Hospital located on 50.000 square meters with 650 employees and a bed capacity of 200. The hospital received ISO 9001:2000 certificate on 2006, and classified to be hospital of first level "A" by the ministry of public health at 2015. According to 2016 statistics 71232 patients received care in outpatient services, 22035 patients admitted to the hospital.

The study conclusion was based on a comparison between the unit cost in all productive departments based on the traditional applied cost accounting system and the cost of same unit that was computed based on ABC system.

The hospital productive departments and direct cost of each department are presented in table 1.

Table 1. – Revenue centers and its unit of production

Department	Unit of production
Pharmacy	1$ of sales
Room and Bed	Night
Intensive care units	Night
Emergency	Patient
Operation Room	K
Laboratory	L
Radiology	R
Clinics	Patient
Catheter Laboratory	Session
Oncology	Session
Endoscope	Patient
Obstetrics	Patient
Neonatal Intensive care unit	Night
Dialysis	Session

Results

Cost according to applied cost accounting system

Table 2 represents the costs each department according to the applied accounting system at the hospital as presented by the hospital and the unit cost in each department.

Table 2. – Cost of unit in each department according to the applied accounting system

Department	Direct Cost	Indirect Cost	Total Cost	Unit	No of units	Unit cost
Pharmacy	2,997,898.81	74,157.95	3,072,056.76	1$ of sales	3,560,294.91	0.86
Room and Bed	2,729,389.86	2,595,528.37	5,324,918.23	Night	62050	85.82
Intensive care units	1,195,947.17	593,263.63	1,789,210.80	Night	5256	340.41
Emergency	852,756.85	370,789.77	1,223,546.62	Patient	29930	40.88
Operation Room	1,163,075.55	1,186,527.26	2,349,602.80	K	855600	2.75
Laboratory	1,663,392.45	1,038,211.35	2,701,603.80	L	10042542	0.27
Radiology	1,751,890.24	964,053.39	2,715,943.63	R	9245870	0.29
Clinics	57,906.96	14,831.59	72,738.55	Patient	8760	8.30
Catheter Laboratory	577,865.38	148,315.91	726,181.28	Session	1460	497.38
Oncology	331,194.95	111,236.93	442,431.88	session	6570	67.34
Endoscope	219,830.73	118,652.73	338,483.46	Patient	5475	61.82
Obstetrics	493,812.07	148,315.91	642,127.98	Patient	2920	219.91
Neonatal Intercave care unit	313,467.87	22,247.39	335,715.26	Night	4015	83.62
dialysis	444,757.85	7,415.80	452,173.64	session	2920	154.85
Total	**14,793,186.72**	**7,393,547.96**	**22,186,734.68**			

Cost according to activity-based-costing (ABC) system

The ABC system requires activities and activity pools to be defined.

Following that, ABC is performed in three stages:

(1) collecting similar jobs in activates;
(2) indirect costs are allocated to activity pools and;
(3) indirect costs are allocated to services.

Table 3. – Total cost and cost per unit according to ABC system

Department	Direct Cost	Indirect Cost	Total Cost	Unit	No of units	Unit cost
Pharmacy	2,997,898.81	613,960.61	3,611,859.42	1$ of sales	3,560,294.91	1.01
Room and Bed	688,762.24	3,289,780.82	3,978,543.06	Night	62050	64.12
Intensive care units	395,947.17	1,490,318.73	1,886,265.90	Night	5256	358.88
Emergency	852,756.85	1,317,510.52	2,170,267.38	Patient	29930	72.51
Operation Room	763,075.55	1,015,818.52	1,778,894.06	K	855600	2.08
Laboratory	1,663,392.45	110,094.66	1,773,487.11	L	10042542	0.18
Radiology	1,751,890.24	182,161.16	1,934,051.40	R	9245870	0.21
Clinics	57,906.96	28,343.23	86,250.19	Patient	8760	9.85
Catheter Laboratory	577,865.38	596,165.78	1,174,031.15	Session	1460	804.13
Oncology	331,194.95	144,768.14	475,963.09	session	6570	72.44
Endoscope	219,830.73	135,496.40	355,327.13	Patient	5475	64.90
Obstetrics	393,812.07	1,015,781.28	1,409,593.35	Patient	2920	482.74
Neonatal Intercave care unit	313,467.87	669,401.27	982,869.14	Night	4015	244.80
Dialysis	444,757.85	124,574.45	569,332.30	session	2920	194.8
Total	**11,452,559.10**	**10,734,175.58**	**22,186,734.68**			

Price of healthcare services according to the Lebanese ministry of public health in Lebanon

The prices of healthcare services according to MOPH are listed in table 4 which represents the updated price of each service provided.

Table 4. – Prices of Healthcare services provided by private hospitals according to MOPH

Department	Price ($)
Pharmacy	1
Room and Bed	75
Intensive care units	375
Emergency	60
Operation Room	5
Laboratory	0.25
Radiology	0.3
Clinics	15
Catheter Laboratory	900
Oncology	100
Endoscope	125
Obstetrics	400
Neonatal Intensive care unit	150
Dialysis	175

Profitability of healthcare services between traditional cost system and ABC system

Table 5 represents the profitability of each service provided by Jabal-Amel hospital according to the prices stated by MOPH, in addition to the variance in this profitability between ABC and traditional costing system.

Table 5. – The profitability of each service provided by Jabal-Amel hospital according to the prices stated by MOPH

Department	Price	Cost per unit		Result for ABC		Result for Traditional		Variance
		ABC	traditional	Value	Rate	Value	Rate	
Pharmacy	1	1.01	0.86	–0.01	–1.00%	0.14	14.00%	–15.00%
Room and Bed	75	64.12	85.82	10.88	14.51%	–10.82	–14.43%	28.93%
Intensive care units	375	358.88	340.41	16.12	4.30%	34.59	9.22%	–4.93%
Emergency	60	72.51	40.88	–12.51	–20.85%	19.12	31.87%	–52.72%
Operation Room	5	2.08	2.75	2.92	58.40%	2.25	45.00%	13.40%
Laboratory	0.25	0.18	0.27	0.07	28.00%	–0.02	–8.00%	36.00%
Radiology	0.3	0.21	0.29	0.09	30.00%	0.01	3.33%	26.67%
Clinics	15	9.85	8.3	5.15	34.33%	6.7	44.67%	–10.33%
Catheter Laboratory	900	804.13	497.38	95.87	10.65%	402.62	44.74%	–34.08%
Oncology	100	72.44	67.34	27.56	27.56%	32.66	32.66%	–5.10%
Endoscope	125	64.9	61.82	60.1	48.08%	63.18	50.54%	–2.46%
Obstetrics	400	482.74	219.91	–82.74	–20.69%	180.09	45.02%	–65.71%
Neonatal Intercave care unit	150	244.8	83.62	–94.8	–63.20%	66.38	44.25%	–107.45%
Dialysis	175	194.8	154.85	–19.8	–11.31%	20.15	11.51%	–22.83%

Conclusion

The variance showed in the unit cost for each revenue department was a result of two main reasons: first is the different methodology of allocating the in-direct costs between the different services of the hospital. Second is the accurate allocation of some direct costs that was considered direct in way that does not match the real consumption of these expenses by different departments.

Moreover, the variance in the result of each service shows that the pricing methodology of healthcare services should be reviewed by MOPH where some relevant notes can be concluded:

1. Wide variances appeared in the result of most services between ABC system and traditional costing system where the result of “Room and Bed” for example raised from –14.43 to 14.43% shifting it from a loss causing service into a profit generating service, while the result of “Neonatal Intensive Care Unit” declined from 44.25% into –63.20% shifting it from a profit generating service into Loss generating service. This may be explained by the change of indirect costs consumed by each service according to both systems.

2. The adjusted results of healthcare services provided by private hospitals reflects that price of high-tech services as radiology and laboratory are over-stated where the results of radiology unit were 30% and the result of laboratory unit was 28%, while the prices of low-tech services are under-stated where the results of emergency unit was –20.85% and the result of obstetrics unit was –20.69%. Considering that the human resources in healthcare sector is highly demanded, the MOPH may need to revise the methodology of healthcare services pricing.

3. The variance of results between of healthcare services between ABC and traditional systems according to the study is 15.40%, which is a considerable value that should be examined in national studies to rephrase the prices of healthcare services provided by private hospitals in Lebanon.

Another suggestion after this study will be constructing ABC in different hospitals for the same period to make comparisons of its efficiency. Moreover, considering that the average of operating level in Lebanese private hospitals is 76%, advanced studies to measure the cost of non-added-value activities in private hospitals may has significant value.

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ВЛИЯНИЕ УЧЕТА ЗАТРАТ НА РЕНТАБЕЛЬНОСТЬ МЕДИЦИНСКИХ УСЛУГ В ЛИВАНСКИХ ЧАСТНЫХ БОЛЬНИЦАХ
ПРИКЛАДНОЕ ТЕМАТИЧЕСКОЕ ИССЛЕДОВАНИЕ: БОЛЬНИЦА ДЖАБАЛЬ-АМЕЛЬ

Ф. ХАМАДИ

На примере частной больницы Ливана сравниваются различные системы калькулировния себестоимости медицинских услуг – традиционная и ABC-система. Показан метод достижения целей по рентабельности предоставляемых медицинских услуг больницами, где внедрение ABC-системы калькулировния обеспечило бы более точное распределение затрат на предоставляемые ими услуги. При этом следует учитывать, что правительство Ливана оплачивает более 80% счетов за медицинские услуги, предварительно устанавливая тарифы на основе сметной стоимости услуг, которая рассчитывается с помощью традиционных систем учета затрат. Исследование направлено на изучение влияния внедрения рассматриваемой ABC-системы калькуляции на рентабельность каждой медицинской услуги в ливанских частных больницах, например в больнице Джабаль-Амель в Ливане.